

V1151

Quad-Port FPGA XMC Card

Benefits

High density FPGA XMC card for next generation data distribution and signal intelligence systems

Supports 1/10/25G Ethernet, 1/2/4/16/32G Fibre Channel, 1/2/2.5/10G sFPDP, 1-10G ARINC 818-2

A COTS solution optimized for SWaP (size, weight and power)

Next generation host interface connection bandwidths

A programmable FPGA with a powerful development framework

Real-time data streaming directly from sensors

Features

Four SFP28 ports accommodate either:

- 1x 100G Ethernet
- 1x 40G Ethernet
- 4x 25G Ethernet
- 4x 10G Ethernet
- 4x 1G Ethernet
- 4x 1/2/4/8/16/32G Fibre Channel
- 4x 1/2/2.5/10G sFPDP
- 4x 1-10G ARINC 818-2

Xilinx Virtex/Kintex Ultrascale+ FPGA

Supports PCIe Gen3 x 16 and Gen4 x 8

PPS time synchronization with μ Sec resolution

Thermal sensors for monitoring card temperature

Robust FPGA development framework

Advanced APIs that support multi-core and multi-processor architectures

Optimized Windows & Linux drivers and libraries

Offload engine for real-time communication

Streaming front-end FPGA core for quick sensor integration

Available in air- and conduction-cooled XMC form factors

Overview

Reducing system size, weight and power (SWaP), while increasing performance, is critical for operational life and budgetary constraints of military radar and remote sensing systems. The requirement for increasingly higher port density, bandwidth, and processing power to support larger arrays, while still staying within SWaP and budget requirements, is a significant challenge to engineering architects. New Wave DV satisfies these requirements with the V1151 FPGA XMC Card — dramatically increasing bandwidth while providing plenty of FPGA resources to process data and support PCIe host connectivity.

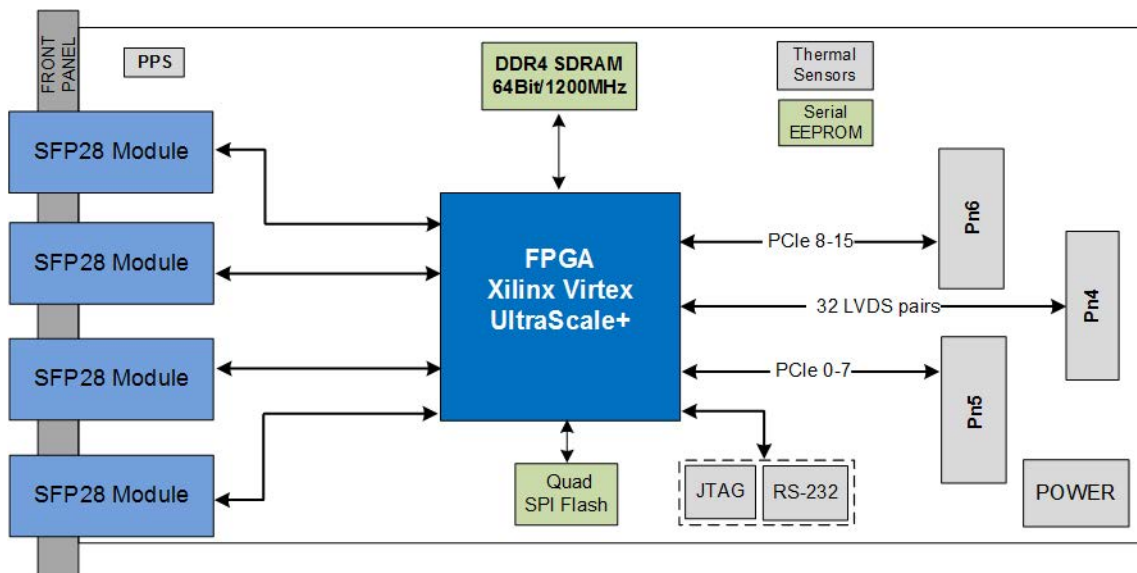
Increased Bandwidth & Flexibility

The V1151 is the industry's most advanced XMC solution designed to provide a real-time high-bandwidth network interface and processing module for next generation radar and signal intelligence systems. It comes with a range of Xilinx Virtex/Kintex UltraScale+ FPGAs, different memory configurations to meet application requirements, and support for different carrier boards using PCIe and XAUI. Design flexibility to meet application requirements results in optimized SWaP, shorter development cycle, and enhanced performance.



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> V1151 XMC Block Diagram

Simplified Programmability Framework

The V1153 can optionally ship with a Development Framework, a fully-integrated and flexible toolset that provides the infrastructure necessary to ensure rapid deployment of custom applications. The framework abstracts the details of the protocol and interfaces, memory controllers and host fabric interfaces, thereby reducing the development effort and schedule for designers to implement custom solutions.

Multi-processor Multi-core Support

The V1151 is uniquely suited to system architectures involving multiple processing cards on a common switched data plane. Specifically, the V1151 supports shared access from multiple host processors, enabling it to function as a cost-effective, high-performance gateway. This feature enables a single high-speed pipe to carry multiple virtual channels in systems that need to spread or load balance sensor data across processor farms.

Optional Protocol Engines

The V1151 is an extremely flexible FPGA-based interface card. The card features all of the necessary hardware, FPGA IP cores, plus software drivers to support Ethernet, Fibre Channel, sFPDP, and ARINC 818. New Wave also offers options for custom high-speed serial protocols or user-developed IP cores.

Operation Customization

The V1151 is an FPGA based network card that can be customized to fit your requirements. New Wave provides access to the FPGA for customers to customize, however New Wave can also modify existing cores or develop new cores for your applications. If you have specific networking requirements, New Wave can help you accomplish your goals.

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Complete Product Support Program

New Wave DV prides itself on its excellent customer support, a fact that is echoed by our customers. New Wave DV provides industry standard warranty on its products, but it is the human factor that makes our support so valuable to our customers. Our team takes the time and effort to ensure that the customer experience with our products is a positive one.

Our Commitment

New Wave DV is committed to providing the latest innovations in technology, architectures, and techniques to keep our customers one step ahead of the rest. Our products, complete with the Development Framework, are intended to offer our customers an entirely unique out-of-the-box experience.

Alternate Form Factors

The V1151 is designed for use in a variety of mission-critical applications. Whether you need its capabilities in XMC or other form factors such as VPX, PCIe (double-width), PXle, or others, we're happy to help accommodate your needs and provide you with the solution best suited for your success.



PXle



VPX



PCIe

Technical Specifications

NETWORK INTERFACE

Four SFP28 optical ports

ETHERNET PROTOCOLS

RTPS, TCP, UDP, ARP, ICMP, Multicast, Broadcast

FIBRE CHANNEL PROTOCOLS

RDMA, AV, ASM

ADDITIONAL PROTOCOLS

sFPDP, ARINC 818-2

FPGA DEVICE

Xilinx Virtex UltraScale+ (VU3P)

Xilinx Virtex UltraScale (VU065 to VU095)

Xilinx Kintex UltraScale (KU095)

MEMORY

One bank of 8GB up to 1200MHz DDR4 SDRAM

FLASH

One 1Gb memory for storing a default configuration image

HOST INTERFACE

PCI Express (Gen4) x8 (Pn5)

PCI Express (Gen3) x16 (Pn5 & Pn6)

Two XAUI (Pn5), Two XAUI (Pn6)

EXTERNAL INTERFACE

32 differential pairs (user configurable)

PPS Interface for time synchronization with μ second resolution

RS-232 serial interface for debug

THERMAL SENSORS

2 digital temperature sensors

COMPLIANCE

VITA 42.2, 42.3, 42.6

VITA 61.0

IEEE 802.3ae 2002 IEEE 802.3ba 2010

FC-FS-3 INCITS 470-2011

OMG RTPS DDS Interoperability Protocol 2.2

DIMENSIONS

74 mm (width) x 149 mm (length)

POWER REQUIREMENTS

Maximum 30W

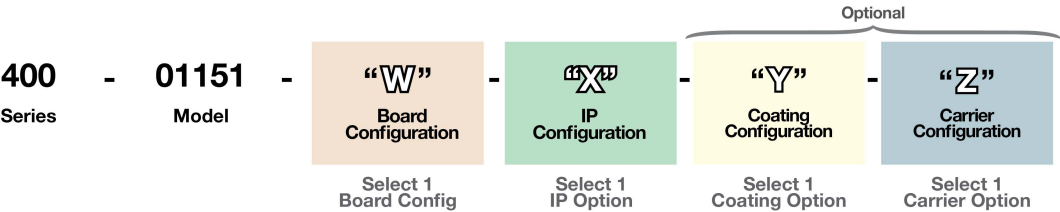
TEMPERATURE

Operating: 0°C to 45°C at 600 LFM (air-cooled)

Operating: -40°C to 70°C (conduction-cooled)

Storage: -40°C to 85°C

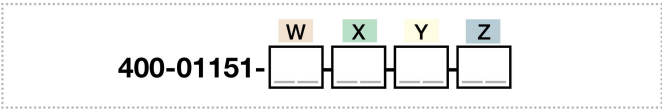
V1151 Hardware Part Number Configuration



W

Config #		Configuration Option Details			
VITA42	VITA61	FPGA	DDR4	P14	Rate
00	40	VU3P	DNP	DNP	1-25G
01	41	VU3P	DNP	P	1-25G
02	42	VU3P	P	P	1-25G
03	43	VU3P	P	DNP	1-25G
#04 - #09	#44 - #49	Reserved	Reserved		
10	50	KU095	DNP	DNP	1-10G
11	51	KU095	DNP	P	1-10G
12	52	KU095	P	P	1-10G
13	53	KU095	P	DNP	1-10G

*P = Populate; DNP = Do Not Populate



Y

Config #	Description
AR	Acrylic conformal coat
UR	Urethane conformal coat
ER	Epoxy conformal coat
SR	Silicone conformal coat
XY	Parylene conformal coat
BLANK	No conformal coat

X

Config #	Description
02	Fibre Channel ASM IP Core (4 Ports)
05	Ethernet 10G RTPS IP Core (4 Ports)
06	Ethernet 10G RTPS IP Core (2 Ports)
17	sFPDP IP Core (4 Ports)
21	Fibre Channel ULP IP Core (4 Ports)
22	ARINC-818 IP Core (4 Ports)
32	Fibre Channel ULP IP Core (2 Ports)
00	No IP

Z

Config #	Description
PE	XMC delivered in PCIe form factor via carrier card
3V	XMC delivered in conduction-cooled 3U VPX form factor
3A	XMC delivered in air-cooled 3U VPX form factor
PX	XMC delivered in PXIe form factor via carrier card
BLANK	XMC delivered in XMC form factor without carrier card
Additional options available. Please inquire.	